

WHAT IS CLAIMED IS:

1. A device for detecting a presence or an absence of a redox reactive analyte in an aqueous sample, the device comprising an electrochemical cell having a sensing chamber, a first electrode, a second electrode, an aperture for admitting the sample into the sensing chamber, and a reagent contained within the sensing chamber, wherein the device contains a quantity of the reagent sufficient for only a single test, and wherein the reagent is capable of undergoing a redox reaction directly with the analyte to generate an electrical signal indicative of the presence or absence of the analyte.
2. The device of claim 1, wherein the first electrode comprises a sensing electrode.
3. The device of claim 1, wherein the first electrode comprises a material selected from the group consisting of platinum, palladium, carbon, indium oxide, tin oxide, gold, iridium, copper, steel, silver, and mixtures thereof.
4. The device of claim 1, wherein the second electrode comprises a counter electrode.
5. The device of claim 1, wherein the second electrode comprises a metal in contact with a metal salt.
6. The device of claim 5, wherein the metal in contact with a metal salt is selected from the group consisting of silver in contact with silver chloride, silver in contact with silver bromide, silver in contact with silver iodide, mercury in contact with mercurous chloride, and mercury in contact with mercurous sulfate.
7. The device of claim 1, the electrochemical cell further comprising a reference electrode.
8. The device of claim 1, wherein the reagent is capable of oxidizing an analyte comprising an antioxidant.
9. The device of claim 8, wherein the reagent is selected from the group consisting of ferricyanide salts, dichromate salts, permanganate salts, vanadium oxides, dichlorophenolindophenol, osmium bipyridine complexes, and quinones.
10. The device of claim 1, wherein the reagent is capable of reducing an analyte comprising an oxidant.

11. The device of claim 10, wherein the reagent is selected from the group consisting of iodine, triiodide salts, ferrocyanide salts, ferrocene,  $\text{Cu}(\text{NH}_3)_4^{2+}$  salts, and  $\text{Co}(\text{NH}_3)_6^{3+}$  salts.

12. The device of claim 1, the sensing chamber further comprising a buffer, wherein the buffer is contained within the sensing chamber.

13. The device of claim 12, wherein the buffer is selected from the group consisting of phosphates, carbonates, alkali metal salts of mellitic acid, and alkali metal salts of citric acid.

14. The device of claim 1, further comprising a heating element.

15. The device of claim 14, wherein the heating element is an electrically resistive heating element.

16. The device of claim 14, wherein the heating element is an exothermic substance contained within the sensing chamber.

17. The device of claim 1, wherein the second electrode is mounted in opposing relationship a distance of less than about 150 microns from the first electrode.

18. The device of claim 1, further comprising an interface for communication with a meter.

19. The device of claim 18, wherein the interface communicates a voltage or a current.

20. The device of claim 1, wherein the electrochemical cell comprises a thin layer electrochemical cell.